LIBRARY JOURNAL

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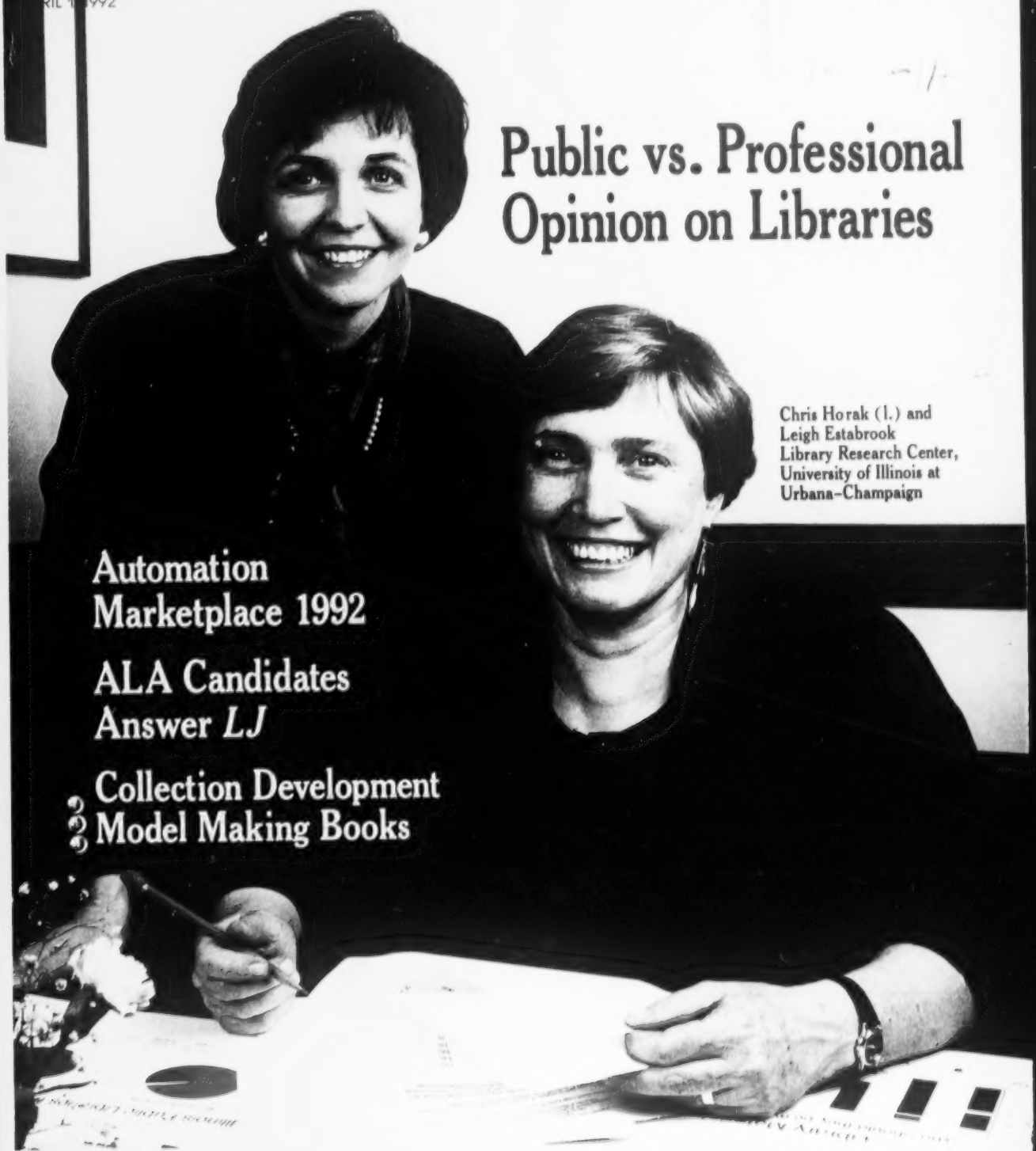
Public vs. Professional Opinion on Libraries



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Chris Horak (l). and Leigh Estabrook of UI's Library Research Center have been searching out library statistics for some time. Their recent poll on "Public vs. Professional Opinion on Libraries" is discussed on page 52.

PHOTOGRAPH BY GARY SIGMAN

April 1, 1992

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Including small system vendors changes the way we compute the technology market. In fact, measuring the growth of automation means inventing a brand new ruler

Automated System Marketplace 1992

Redefining The Market Itself

By Frank R. Bridge

AS WE CONTINUE to examine the prevailing trends in library automation, the major emerging theme is that library automated system downsizing has continued and accelerated. Over the past several years, extensive information regarding the smaller system vendors had been difficult to obtain. Refusing to respond to previous surveys, these vendors justifiably complained that the earlier marketplace articles tended to concentrate upon the larger system vendors. However in this year's survey, the author reminded the smaller system vendors that their continued failure to provide statistics served only to insure their exclusion. With this gauntlet upon the ground before them, many of these vendors have finally joined the fray.

With the improvement in local area network (LAN) technology, along with more powerful microcomputers, smaller vendors can more effectively address the multiuser environment, i.e., scaling up their system sizes. Ironically, the same hardware performance gains have allowed many of the larger vendors to reduce the number of concurrent users and still provide a cost-effective system solution. The resulting overlap at the small end of the marketplace has caused a number of problems this year in defining the marketplace itself. Some of the larger vendors have grumbled that the counts during the past several years have included systems that were not "serious multiuser systems." The finger-pointing has been directed primarily at Dynix, whose increasing system sales counts were heavily based upon 286-, 386-, and 486-based microcomputer systems. But these Dynix systems run a form of UNIX, a multiuse, operating system. Moreover, like their larger counterparts, these systems support ordinary terminals connected via serial cabling in a star configuration and offer circulation control, online public access catalog, and a MARC-based cataloging interface, with software functionality virtually identical to the larger Dynix systems. Therefore, when compared to the larger systems, the only glaring difference is the number of concurrent users.

Once you have begun to describe the marketplace in terms of concurrent users, the inclusion of other vendor models, specifically LAN-based microcomputer systems, is a very short jump. Many of these vendors offer the identical modules described above. At similar terminal counts, they offer comparable, and sometimes lower, costs. The author cautions that there is often a trade-off for these cost

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Table 1: Market Share Total Installed Systems

Company	Worldwide				U.S.	
	All Years		1991		All Years	1991
	Total No. of Systems	Total No. of Systems minus 1-4 Terminals	Total No. of Systems	Total No. of Systems minus 1-4 Terminals		
Ameritech	78	78	0	0	78	0
Brodart *	3	3	0	0	3	0
CARL	27	27	16	16	27	16
Carlyle *	34	34	0	0	22	0
Centel	29	0	2	0	26	2
CLSI	309	298	1	1	240	0
CMDS	8	8	2	2	8	2
CoBIT	10	10	4	4	10	4
Comstow	54	31	6	4	52	5
CTB	1250	380	810	200	800	470
DRA	209	205	35	35	187	31
Data Trek	324	139	113	60	270	90
Dynix	743	546	265	173	383	135
Gateway	18	14	10	10	18	10
Gaylord	71	68	35	35	71	35
Geac	290	284	38	38	105	12
Highland	24	21	9	7	24	9
IME	1350	1042	206	164	51	26
Info Dimensions	223	0	33	0	138	16
iNLEX	282	103	52	22	267	51
Innovative	251	249	55	53	234	50
Library Corp.	121	61	61	31	116	59
multiLIS	144	129	39	35	19	7
NOTIS	159	159	14	14	147	14
NSC	20	17	5	4	19	4
Ringgold	33	8	5	3	32	5
Sirsi	144	121	62	50	132	52
UNISYS	37	37	4	4	25	3
VTLS	214	150	23	15	159	11
Total No. of Systems	6,459		1,905		3,663	1,119
Total No. of Systems minus 1-4 Terminals	4,222		980			

*** 1991 figures not available**

savings, but it is highly vendor-specific and requires careful buyer screening. For example, some small system vendors do an excellent job with installation, training, project management assistance, and problem diagnosis. Others provide little more than the software in a shrink-wrapped package and a wish for good luck.

How totals are calculated

Unfortunately, by making this transition to LAN-based systems, the charts traditionally included in this article now become highly distorted. Although the author could not confirm these figures from a user list, the vendor that clearly dominated the marketplace is Winnebago, with over 10,000 systems in place and 2200 systems sold in 1991 alone. Next comes Nichols with 1020 systems (also unconfirmed) and CTB with 810 systems, for a combined 1991 total market share of 92%. While the author does not claim that these products are identical to those of the vendors traditionally highlighted in this article, by including these "little system" vendors, one makes several very important points. First, in the 1-4 terminal market, a library will encounter Dynix, CTB, Winnebago, and many others now highlighted herein. Second, in terms of raw numbers, there are far more small libraries than larger ones. Third, this market is for real—growing and demanding. Therefore, the arbitrary exclusion of smaller systems, especially in light of their recent market impact and enhanced capabilities, is provincial.

However, expansion into the small system market carries considerable, steady, upward pressure on vendor services, and personnel costs are not nearly as flexible as computing hardware capabilities. This inelasticity reduces vendor profitability, a major business obstacle as the market evolves. Some of the vendors have made some interesting inroads and original solutions to these problems. (For additional information on this rather thorny issue, see "How Automation Vendors Are Coping with Change," p. 66.)

Unhappily, the continued growth of these new tech-

nologies has made the definitions of "system" and "terminal count" increasingly problematical for us as we attempt to devise some standard with which to measure the marketplace. ("On Calculating Market Share: A Definition," below, offers a more detailed explanation.) Therefore, depending upon one's definition of the marketplace, measuring its growth can result in wild statistical fluctuations. Based on the new definition of "system" counts regardless of terminal network size, the total no longer remains comparable to previous years. Table 1 reveals that worldwide, there were 6,459 systems sold by North American vendors. The "comparable" chart from last year's article indicated just 2,745 systems. While compiling this huge total may seem a little silly, Table 1 also provides the totals excluding those systems with 1-4 terminals. Even so, there were 4,222 systems installed, implying a net growth of 1,477 systems from the 1990 figures (54%). For those larger system traditionalists that still want a closer statistical comparison to previous years, we can omit 1991 sales of up to 16 terminals. The 1991 increase then becomes 961 systems, and this translates to a net market growth of 35%; last year's growth was 28%. The last of the complainers will argue that these totals reflect new vendors who were not part of the surveys in previous years. The author responds that this is a reflection of a living, changing marketplace where vendors and their system architectures come and go. In short, no matter how you look at it, there were a lot of small systems installed in 1991, which is the reason for including these sales in the article regardless of vendor. (For additional information, see "Automated System Marketplace 1991: Redefining System Frontiers," *LJ*, April 1, 1991, p. 50–62).

On Calculating Market Share: A Definition

IN REVIEWING the results of the 1991 marketplace, readers should be aware of the following conventions used during the analysis. Because of the continually changing technology, some of the standards used in previous years have been altered, yielding considerable changes in the overall counts:

- When the author determined that vendors had counted libraries sharing a system as multiple installations, adjustments were made to vendor responses to determine individual installation sites, and then these sites were counted in our tallies.

- Although the use of stand-alone microcomputers by libraries for circulation, online catalogs, and for technical services activities is important, this article is focused on multiuser, integrated library systems. While the intent of this article is to exclude single-user, single-module, stand-alone systems, many of the microcomputer-based systems offer multiuser systems with modules similar to the larger minicomputer-based multiuser systems. Therefore, the author has included multiuser microcomputer systems in this year's survey.

- With the growth of microcomputers and their connection to LANs, the definition of "terminal count" also has become very complex. There used to be a one-to-one correspondence between terminal counts and concurrent users. This is no longer true. Systems can contain "dedicated" terminals, which can be either dumb terminals or microcomputers serving as terminals at least 95% of the time. Systems also have dedicated dial-up ports, which are essentially the same as dedicated terminals. Lastly, systems also can have nondedicated ports. These are typically LAN ports through which potentially thousands of users could access a system. If there were software-driven limits to LAN access, these numbers were used as "terminal counts." If not, the vendors were asked to estimate the total user count by taking a 5% ratio of the LAN-connected terminals.

- As in last year's article, certain vendor totals may look exaggerated or incorrect. Please note that the author adjusted the total installations reported based upon the number of systems installed and the number of systems "removed" (i.e., maintenance no longer being paid) as libraries grew into their second and third automated systems during 1991. Numbers should now reflect the current user base.

The bottom lines

Once again, the impact of these smaller systems on vendors' fiscal performance is difficult to judge, considering the scant information received. As in previous years, we bravely attempted to gather estimates of the vendor revenues. Just as consistently, only a few vendors have permitted us to publish this information, although most of them provided it. The conclusions? First, the library automation marketplace is a $253 million industry, based on library-system related revenues only, up from last year's $178 million. Fortunately, last year's publishable figures included the same five vendors as this year, and their totals are up a combined total of 27%. Still, with just five vendors willing to disclose financial information and the market becoming increasingly difficult to define and segment, the number of installations remains a primary measure.

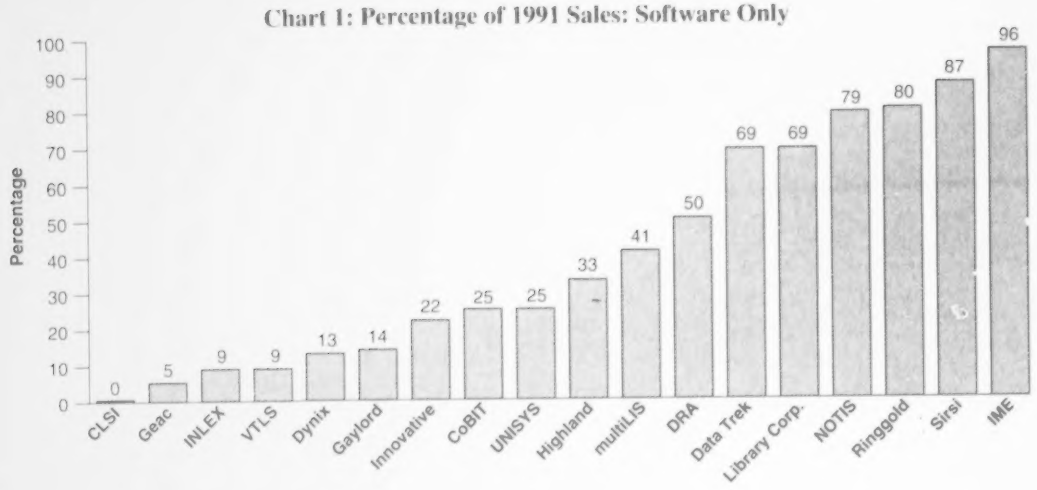
U.S. vs. foreign

During the past year, many of the vendors have considered the foreign marketplace not only desirable, but necessary for their continued prosperity. The expansionist list grows ever longer. Some of the traditional ones include Dynix, CLSI, VTLS, and DRA. There are also foreign companies seeking inroads here, like multiLIS, Geac, and IME. But the roster grows longer with vendors like Sirsi, which opened an office in England, and Innovative, which sold two systems in Taiwan.

Table 1 presents the worldwide market shares for total installed systems for all years and the same totals for U.S. market shares, based on the newly expanded microcomputer system definition. Now begins the madness resulting from the overlap at the small system end. Worldwide for all years, the leaders are IME and CTB with 1350 and 1250 systems, respectively. The U.S.-only figures for all years change things very little, except that IME (51) is bumped completely out of the standings.

Perhaps the dust will clear if we omit the smallest systems, those with

Chart 1: Percentage of 1991 Sales: Software Only



Figures include typical turnkey sale and joint venture sale vendors (where hardware manufacturer jointly participates in proposing the system)

four or fewer terminals. At least we are now examining the overlap of multiuser system types, either LAN-based or star-cabling based. Here, the worldwide leader is still IME, with a user base of 1,042 systems.

Software-only sales

Last year we reported that software-only sales percentages were generally on the rise in the minicomputer market. This year, although there were a couple of vendors showing some software-only sales gains percentages (Gaylord, Geac, and Dynix), all others showed declines. This may be attributable to increases in smaller system sales in the minicomputer environment, where libraries prefer a more protective, turnkey arrangement. Ironically, traditional microcomputer library system procurements were virtually always software-only sales. But as microcomputer-based systems upsize, we have begun to find occasional turnkey transactions, just like their bigger minicomputer brothers. For example, both Ringgold and Data Trek have been considered as microcomputer-based systems. However, their 1991 software-only sales were 80% and 69%, respectively.

With software-only procurements, many vendors had shown skittishness regarding system performance and reliability. This has changed considerably, although it is very vendor-specific. Usually these assurances require the library to allocate very specific computing resources, including disk space, main memory, terminal counts, and computing power.

Academic libraries

Chart 2 illustrates the worldwide market shares for academic libraries for all years and for 1991. Because of the enlarged scope of the article, the numbers of systems sold in the academic arena for all years (1,573 systems) and for 1991 (289) are not comparable to last year's tally. However, by retrieving the 1990 figures (154 systems installed) and comparing them with the same vendors for this year (170 systems installed), we find a 10% increase. Considering the 1991 economy, this is a pleasant surprise. For those readers who like head-to-head tallies, it appears that Innovative strengthened its grip on the academic marketplace during 1991. Although its worldwide all years figures trail behind IME (289 to 199), Innovative still leads the industry this year with 43 sales. Considering that Innovative managed to counter the downsizing trend by selling 26 systems in the 32-125 terminal range, this is a significant accomplishment. On the strength of its European performance, IME was second in 1991 with 42 systems. DRA also had a very good year in the academic market, with 24 systems, 15 in the 33-125 terminal range.

Public libraries

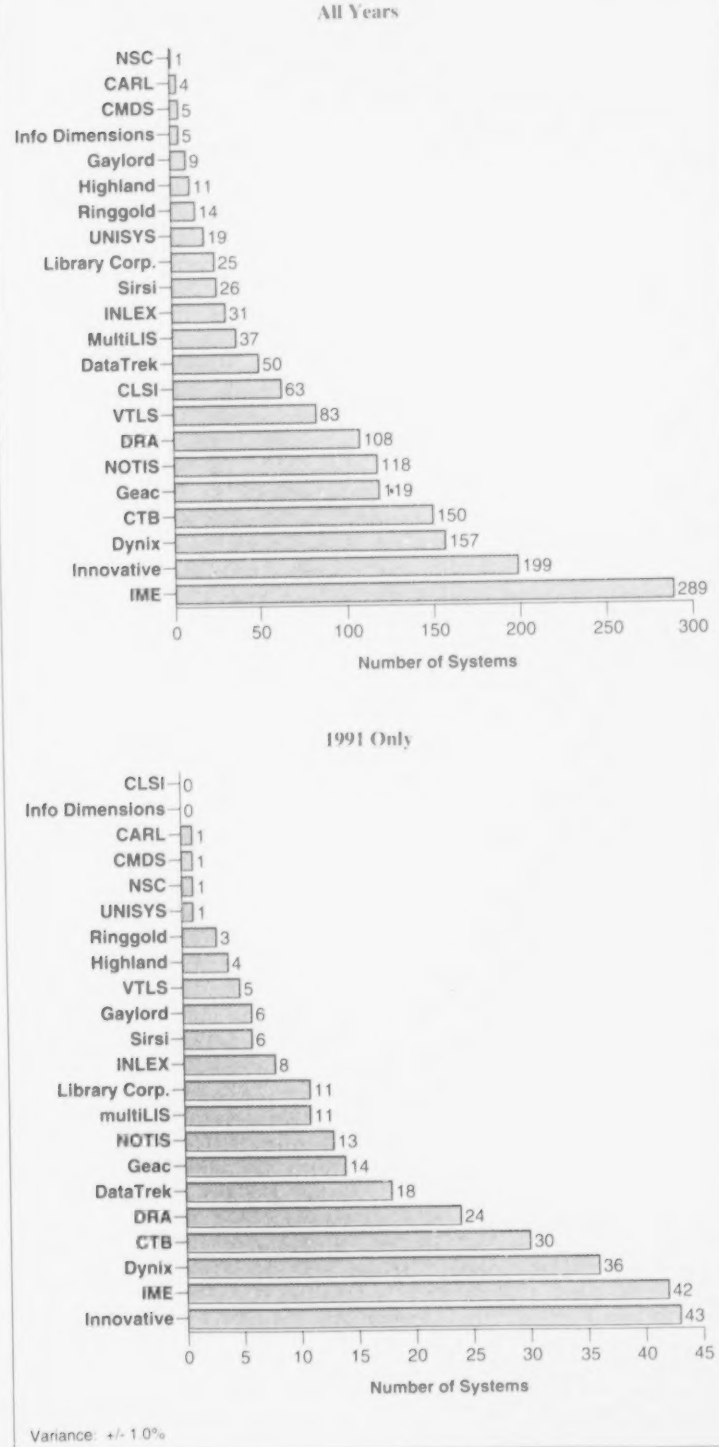
A few surprises occurred in the public library marketplace, mostly resulting primarily from the new system definitions. Dynix surged into the lead in all-year worldwide installations with a total installation base of 264 public libraries. However IME, a newcomer to the article but founded in 1984, barged into second place with 240 systems. This bumped CLSI into third place with a respectable 208 systems, most of them medium-sized and larger. Other public library smaller system vendors enjoying some new exposure include CTB (100) and Library Corporation (63). All year totals aside, it is the 1991 efforts that clarify where the public library business is really being done and hints at future trends. Disregarding Winnebago, Follett, and Nichols, whose huge statistics are either unverified or missing, Dynix is out in front of the pack with 67, followed by Library Corporation with 39, and newcomer IME with 37.

Very small and very large systems

Table 2 is rather special, as this year we wanted to segregate the business in very small systems, those with 1-4 terminals. It is very revealing. Winnebago, Follett, and Nichols notwithstanding, CTB is essentially off the scale, with 610 of its 810 systems falling into this marketplace niche. Moving up in system size to the 5-16 terminal range, the leader remains CTB with 155 systems. Another step upward in system size for 1991 examines the medium-sized market (17-64 terminals). The more familiar names begin to proliferate in this difficult and competitive arena. As the system size rises, the overall sales numbers really begin to fall, reflecting the extensive penetration into this marketing group.

The new system market in very large systems has begun to dry up, but the next several years should prove in-

Chart 2: Worldwide Installations in Academic Libraries



teresting. These rare and lucrative accounts will be needing upgrades or replacement, and this will provide additional opportunities for vendors attempting to invade each other's turf. As a prelude, behemoth system vendor CARL had ten such installations in 1991, mostly attributable to migrations from Utlas systems. In the meantime, there were only a handful of the big ones installed this past year. If the reader is wondering about NOTIS, the company's 1991 totals are missing from the chart because the data were not available at press time.

Vendor profiles

Remaining mindful of the radical change in the scope of marketplace coverage this year, let's examine the individual track records for the vendors during 1991.

Ameritech Information Systems

This Baby Bell company entered the library marketplace in 1990 after acquiring OCLC's Local Systems Division. In 1991 the firm continued its pattern of library system vendor acquisitions, first by purchasing NOTIS Systems, Inc. and then announcing in early 1992 its intent to purchase Dynix as well. (See Dynix and NOTIS profiles below.) The Ameritech takeovers have brought about considerable confusion regarding the fate of the LS/2, LS/2000, SC350, and ACQ350 systems. Moreover, Ameritech's survey response created additional questions. On the one hand, the company reported plans to continue working on releases for the LS/2000 and both of the 350 systems. Next, Ameritech indicated that it was no longer marketing or selling the packages. Also, there was no mention of the fate of the Tacoma Public Library's Alice-B system, a CD-ROM/minicomputer-based hybrid, which Ameritech was positioning for high-transaction libraries in 1991. Last year Ameritech reiterated its commitment to the library marketplace. This year the vendor provided a more precise definition of this commitment—through 1992 for the LS/2 systems and through July 1995 for the LS/2000 and and 350 systems. Apparently with the NOTIS and Dynix acquisitions, the long-term commitment seems more open-ended in this direction.

AutoGraphics

AutoGraphics is already familiar to librarians as a retrospective conversion vendor. The company's primary product is a CD-ROM catalog, but in 1990 the company acquired the LIBerator microcomputer-based library automated system and renamed it SLiMS (Small Library Integrated Management System). As part of its 1991 efforts, AutoGraphics began recoding SLiMS so that the MARC-based records on its CD-ROM catalog could be imported directly into SLiMS. Interestingly, this downloading capability includes a batch

function that permits a complete file dump of the library's holdings from the CD-ROM union catalog. This capability carries rather far-reaching implications for rapid creation of varying online subsets of library groups and for copyright issues. Plans for 1992 include a new SLiMS release and an increase in user base.

CARL Systems, Inc.

Traditionally, our survey instrument has not portrayed CARL very well and the 1991 reckoning provided equally nebulous results. For example, CARL had a 120-terminal expansion of its Arizona State University site to include Northern Arizona University. However, by our standard definitions, this upgrade did not count as an "installation." Fortunately, CARL can take some solace through its absorption of the Utlas T/50 system support operations. Because CARL and Utlas function upon the powerful Tandem computer series, the 1991 CARL user list now includes seven sites converting from Utlas to CARL and a total of 11 new Utlas sites for the year. CARL is a big-system vendor only; the entire user base of just 27 systems supports 4,976 dedicated terminals, an average of 184 per system. There were only 24 systems sold in 1991 worldwide in the 200-plus-terminal range, and CARL was involved with ten. Clearly, the company has been successful in bucking the small system trend, and it has done this by creating and marketing some unusual products. This year's accomplishments include its Uncover2 document delivery service, an adjunct to its successful Uncover serials title page index. Other 1991 accomplishments include a cataloger workstation, full Boolean search capability, and Gateway to Medline via Paper Chase. The company's 1992 goals include smooth migrations for the Utlas sites to the CARL software, expansion of the Uncover and Uncover2 database, and development of graphical user interfaces (GUI's) to the public access catalog. CARL continues to be a very big "little guy" in the world of large system vendors.

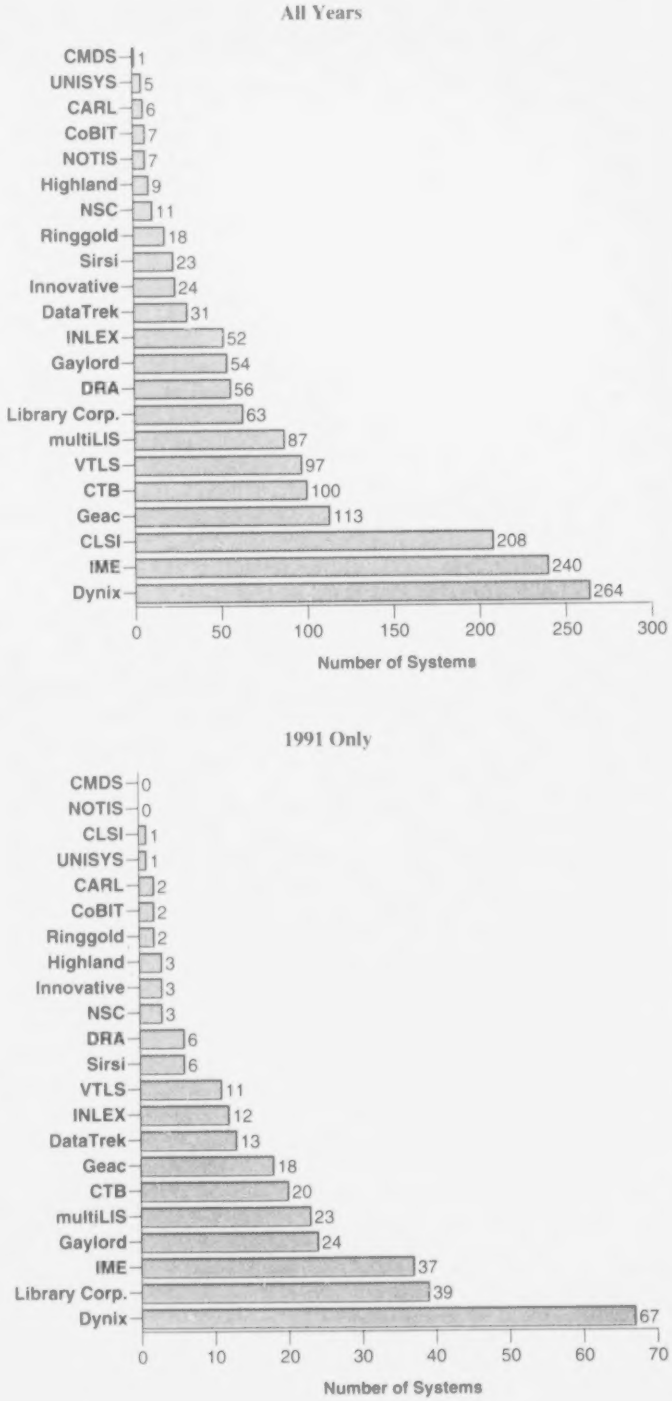
Centel/Datalib

With its sales of two systems in 1991, a small amount of new information became available. This software-only vendor began in the late Seventies by providing software to support the acquisitions functions of several federal libraries. Since that time, the product has expanded into a fully integrated online system that operates on existing host computers. The company's clientele now consists mainly of special libraries in the corporate setting. The company met its planned 1991 goals by furnishing Release 9.7 in March and a patron request software enhancement. Its 1992 goals include a PC-based GUI and user documentation enhancement.

CLSI

Although CLSI continues to work on customer support and has received some positive feedback from its clients, its user base has dwindled somewhat, from 335 sites to 309. However, CLSI reported 53 system

Chart 3: Worldwide Installations in Public Libraries



Variance: +/- 1.0%

upgrades, implying a substantial percentage of its user base is committed to remaining with the company. CLSI accomplished several important goals in 1991, including a strategic alliance with IBM to offer libraries its UNIX-based R/6000 computer platform solutions. This machine has been very popular with many of CLSI's primary competitors and is therefore an interesting offering for future sales and for expansion into the competition's user base. Other completed 1991 goals include the total rewriting of the OPAC CL-CAT Plus using a user-friendly interface. Like its competition, the company introduced a journal citation module for access to a variety of indexed databases. One 1991 goal was postponed until 1992: the general release of the LIBS100plus automated system. It appears that this goal will be met. Other 1992 plans include software-only solutions for libraries with installed UNIX-based systems, additional strategic alliances with computer companies offering UNIX-based platforms, and the creation of a separate division for bibliographic and authority control services for CLSI and other users.

CMDS

Although last year's survey included very little specific user information, this year's response was a bit more revealing. We can confirm that this software-only vendor concentrates primarily on the academic sector of the market; its library automation system is part of a larger package designed to support the administrative infrastructure of smaller colleges, universities, and school districts. Its products are mainly tied to the IBM System 36 and AS/400 platforms. Accomplishments for 1991 include the multiple-site installation at the Vigo County School Corporation (Terre Haute, IN) and the migration of two non-CMDS customers. The company's 1992 goals include a users group meeting at ALA and a marketing focus on its existing customers: installed AS/400 systems and two-year academic libraries. With a general industry move to some form of UNIX and the competition becoming increasingly intense in the smaller academic market, the company's fortunes should prove interesting to follow.

CoBIT

CoBIT was formed in 1989 after completing the purchase of The Library Machine (TLM) from OHIONET. The company focuses mainly on public libraries and offers a cooperative approach to software licensing. Because CoBIT users become owners of this not-for-profit corporation, the company claims that its members thereby have a strong commitment to its vitality. Accomplishments in 1991 include a complete revision of the circulation module to include multiple-user sites, each with distinct parameter-driven circulation rules. The company also successfully merged its user database for inclusion of the TOLEDO CD-ROM union catalog for distribution in early 1992. The company expanded its user base from six to ten users. Goals for 1992 include full implementation and revision of its Keyword/Boolean software into its OPAC and improvements in authority control displays.

Comstow Info Svcs./BiblioTech

Comstow, focusing mainly on corporate and government libraries, had another successful year in 1991. This software-only vendor had previously been dependent upon the VAX/VMS environment, but its products were successfully ported to UNIX platforms last year. The VAX product also enjoyed considerable revamping in 1991, including substantial improvements to the acquisitions-accounting module, E-mail in the OPAC, pop-up windows, and support for the OCLC Prism interface. The company's hallmark appears to be the integration of special library databases with other company/institutional applications. In that vein the company completed an interface to the Paralog TRIP full-text retrieval database management system; an interface to Microsoft Word to link citations to full-text; and a link to graphic image files using the DEC CDA viewer. Company plans for 1992 include multiple full-text retrieval options to documents and articles associated with OPAC citations, implementation of electronic data interchange (EDI) interfaces, and enhancements to security control, a popular feature for the company's corporate/governmental user base.

CTB

CTB, the vendor of the Columbia microcomputer-based library automated system, is a newcomer to the vendor profiles section. This software-only product includes circulation, OPAC, cataloging with MARC-based interface, serials control, and acquisitions control. Although the company imposed considerable restrictions on the dissemination of its user base information, it grew by expansion into the school library market, with 750 packages sold, 610 of which fell into the 1-4 terminal range. Although CTB is one of those vendors that influenced the chart distortions at the lower end, there were still some 115 sites installed in 1991 with 5-8 terminals and 85 in the 16 terminal and above range. The company's primary accomplishment for 1991 is its selection by the Tucson, Arizona school district and the Department of Defense Dependent Schools. Also, the 1991 software release includes a bi-directional union catalog so that revisions and updates can be made either at the local site or the catalog site. The 1992 goals include substantial revisions of acquisitions and serials control.

Data Research Associates (DRA)

DRA again had a very good year, especially in the academic market, where 68% of its 35 sales occurred. This year DRA soft-

Table 2: Number of Vendor Installations Worldwide

Company	Very Small Systems (1–4 terminals)		Small Systems (5–16 terminals)	
	1991	All Years	1990	All Years
CARL	—	—	—	—
Centel	2 *	29 *	—	—
CLSI	0	11	0	65
CMDS	—	—	0	6
CoBIT	—	—	—	—
Comstow	2	23	4	27
CTB	810	610	155	290
Data Trek	53	185	57	134
DRA	0	4	5	43
Dynix	92	197	92	256
Gateway	0	4	7	9
Gaylord	0	3	23	46
Geac	0	6	10	33
Highland	2	3	5	18
IME	42	308	96	833
Info Dimensions	33 *	222 *	—	—
INLEX	30 *	179 *	7	26
Innovative	2	2	15	102
Library Corp.	30	60	28	56
multiLIS	4	15	31	98
NOTIS	—	—	0	2
NSC	1	3	2	10
Ringgold	2	25	3	6
Sirsi	12	23	40	74
UNISYS	—	—	—	—
VTLS	8	64	4	43

* information assumed, figures not available from vendor

ened its campaign for openness in vendor financial information, perhaps because of steadfast marketplace resistance by its competition. This persistent lack of information is unfortunate for the general user community, because one of the most important system evaluation areas is vendor viability. Known for its adherence to computer and library automation standards, this off-the-shelf DEC/VMS system vendor listed 17 standards with which it complies, far too many to incorporate into the applicable tables in this article. Although 1990 found DRA beginning to market in the smaller libraries, this trend accelerated in 1991 with five systems in the 9-16 terminal range and 11 more in the 17-32 market. Other 1991 DRA accomplishments include upgrades to its cataloging, circulation, acquisitions, serials control, local periodical indexing, offline circulation, reserve book room, and report writer products. DRA also hired an international business manager and opened offices in Singapore and Australia. It's important to note that as the U.S. marketplace becomes more crowded, this international thrust will become more common. DRA's plans for 1992 include the expansion of its nationwide network (DRANET), a self-charge station, book reviews in its PAC, and a Z39.50 intersystem connection product.

Data Trek, Inc.

Another newcomer to the vendor profiles section, Data Trek has been traditionally considered "just another small microcomputer-based software package." However, the company offers a DEC/VAX-based product with circulation, OPAC, acquisitions, serials control, and a MARC-based cataloging interface. The product line also contains two LAN-based PC systems—the abbreviated-MARC Manager series and the fully MARC-compatible Professional series. Both offer circulation, OPAC, cataloging, and MARC interface, with the professional series adding modules for serials and acquisitions control, AV handling, and corporate documents. Moreover, there is a version for Macintosh users. Overall, the company listed 113 installations in 1991, and 52 of them were in special libraries. Even when one excludes those systems with terminal counts of 1-4, Data Trek still tallied 60 systems. The company's 1992 goals include the release of serials and acquisitions modules for its Professional series, a Windows version of its OPAC, and updates to its VAX and Macintosh software packages.

Dynix, Inc.

Dynix accelerated its efforts in the small system market during 1991, meeting its stated goal for broad expansion into this area. The system sales tabulation for Dynix is 265, up from its 171 in 1990. The terminal count charts tell the tale of the profound marketplace shift in system downsizing. In the very small system arena (1-4 terminals), Dynix sold 92 packages. (Any direct comparison of Dynix's total to other 1-4 terminal vendors like Nichols [900 systems] and CTB [810 systems] is left to the reader.) In last year's article we reported that 43% of Dynix's new systems contained eight or fewer terminals. This year it is 61%. Expanding the terminal counts to include 1-16 devices, this accounts for fully 70% of Dynix sales this year. To meet this rising demand, Dynix introduced its Scholar system in 1990, redesigning the software to run a form of UNIX on 386- and 486-based workstations in the K-12 environment. During 1991 the company opened its standard Dynix package to these same platforms, and its small system positioning was complete. The Dynix Marquis system, another 1990 rollout designed to drop into an existing LAN, had just two sales in 1991. However, Marquis reflects an ever-growing trend toward more distributed computer networks, and its 1992 fate should prove lively to watch. One of the major topics of conversation at ALA's Midwinter Meeting in January was the sale of Dynix to Ameritech. While speculation abounded, there was really very little concrete information at that time regarding Dynix's future. At the very least, Ameritech will bring considerable financial and technical resources to bear upon the company, especially in the area of data communications. With the increasing emphasis on system connectivity, this type of parent company could bode well for Dynix's future. In other 1992 not-so-surprising goals, Dynix plans for a smooth integration with Ameritech, more migration business from other vendors, expansion of its overseas operations, continued expansion in the school market, and, lastly, to move into a new headquarters building.

	Mid-Sized Systems (17–64 terminals)		Large Systems (65–200 terminals)		Very Large Systems (201+ terminals)	
	1991	All Years	1991	All Years	1990	All Years
	—	—	6	14	10	13
	—	—	—	—	—	—
	0	148	1	70	0	15
	2	2	—	—	—	—
	4	8	—	—	0	2
	0	4	—	—	—	—
	45	84	0	6	—	—
	3	5	—	—	—	—
	22	106	7	45	1	11
	48	193	25	82	8	15
	1	2	2	3	—	—
	11	21	—	—	1	1
	17	76	9	161	2	14
	2	3	—	—	—	—
	68	208	0	1	—	—
	—	—	—	—	—	—
	10	57	5	19	0	1
	30	120	8	26	0	1
	3	5	—	—	—	—
	4	24	0	6	0	1
	0 *	38	0	61	0	44
	2	7	—	—	—	—
	0	2	—	—	—	—
	6	39	4	9	—	—
	1	10	2	11	2	16
	5	67	6	27	0	3

Gateway Software Corporation

Gateway, based in Montana, specializes in software-only sales to school districts, where library automation software is usually a subsystem to the school district's administrative package. Its installations in 1991 grew from eight sites to 18. Gateway's library product functions on the IBM AS/400 platform. Achievements in 1991 include the ability to create MARC records and to use local holdings tags to create item records. The company boasted its largest system installation, with 25,000 students, 30 schools, and 400,000 bibliographic records. Goals for 1992 include its first user group meeting and the development of a media booking module, deferred from its 1991 schedule by user request.

Gaylord Information Systems

Once again, Gaylord's GALAXY product did well in 1991, jumping from 36 installations in 1990 to a total of 71 in 1991. The DEC/VAX-based product has generally matured, with the completion of its acquisitions and serials control modules and its new networking software link to CD-ROM systems and other external databases di-

How Automation Vendors Are Coping with Change

In preparing this year's survey answers, vendors had to suffer through several essay questions that focus on current and emerging marketplace trends and problems. Because the answers tend to be views from the corporate top, the responses involve not only vendor marketing staff but also the executives, and some vendors gave very perceptive answers. Like the roads in the Roman empire, the questions all lead back to the growth of smaller systems serving smaller libraries.

The profit squeeze

Vendors have seen their profits squeezed between the intense competition, the reduction in hardware costs, and the escalating costs for service. We asked the vendors to discuss how they were meeting this challenge. The smaller system vendors almost universally state, "What problem? We've been doing this all along." However, Michael George of AutoGraphics answers by indicating, "our system support infrastructure is already well established to maintain a customer base throughout the United States and Canada.... Librarians automating today are involved and knowledgeable and know what they want to accomplish, although, perhaps, not how. The right tool is all that is lacking."

A larger turnkey vendor, like CLSI's Richard Porter, brings a slightly different perspective in that the "right tool" may not yet have arrived: "some date in the future, selective library functions can be provided to libraries in the form of 'shrink-wrap' software licensing, but CLSI does not see this happening in the near future. Even small libraries will continue to want flexible parameter-driven systems—contrary to the control needed by most shrink-wrap software strategies."

Data Trek's David Cheatham comments, "As microcomputers have become more and more of a commodity item, the reliability has increased and the cost of servicing has decreased. The manufacturer's mean time between failures we sell is now at 150,000 hours—that's 17 years if you left the computer on every hour of every day." But the hardware is only one system component; INLEX's Jan Neal elaborates. "High-quality, stable software in both the micro and the mini environments is the secret to controlling support costs.... Enhancing the content and frequency of customer training opportunities reduces overall need for support."

System performance guarantees

Moreover, in the small terminal count market, many libraries have never automated. They often lack local expertise in system implementation and therefore must turn to the vendor. Although system costs may hint at the quality that the small library can expect, performance guarantees can be very elusive. These include functionality (Does the system perform as promised?), reliability (How often does the system fail?), response times (How swift is system throughput?). In preparing this question, the author had hoped that some of the smallest system vendors would provide some additional insight into their performance guarantees, but we generally received noncommittal answers like "we fix the system as soon as possible." The larger ones furnished more concrete answers. CLSI maintains a complete onsite system testing lab. Dynix owns a company that performs computer simulations for system performance testing. NOTIS, INLEX, Innovative, and DRA typically agree to such standards even in software-only sales as long as adequate resources are allocated. But Gaylord's Charles Farley had the most interesting performance guarantee. "If for any reason, you are not completely satisfied with your GALAXY System, return it within 180 days of installation, and we'll return your money. No questions asked."

> Smaller systems serving smaller libraries account for the market's growth

UNIX, the only (?) operating system

There has been a great deal of discussion regarding the future of the UNIX operating system and what it means for library automation. The vendors are generally divided into three camps. The first is the UNIX-based group, who have generally been providing the message "UNIX is the wave of the future, and we are the solution to the open-system issue." It is true that such software packages can be fairly easily ported among UNIX machines. This often provides considerable hardware flexibility and improved cost/performance returns. Nevertheless, the open system environment (where disparate systems talk transparently to each other) is growing increasingly dependent upon library application software enhancements, not operating systems. Thus for open systems, the library system buyer should be looking for emerging library software compliance with the Z39.50 standard. The second group contains the vendors whose systems run under different, often proprietary, operating systems. Their rallying cry is "UNIX is not an operating system. There are many flavors of UNIX out there, often customized for a particular computer platform. You can't move UNIX-compatible software around like MS/DOS packages." This is also true. While the difficulty depends upon the vendor and the change of computer, a UNIX-based package must be carefully tuned to run reliably on another UNIX-compatible machine. The third group is an offshoot of the second. Their approach is "We'll rewrite our software to run on UNIX-based machines." Carl Grant of DRA states, "UNIX in its 200+ forms offers no more assurance of portability than the so-called proprietary systems. The portability will be achieved when the POSIX operating system arrives.... Until then true machine independence is largely 'smoke and mirrors.'" Keith Wilson of Dynix indicates, "About three years ago we moved to UNIX, which gave us and our customers even more choices.... We believe that there is even more to this principle than simply a choice of computers. Our organization ... is more adaptable and is ready for change."

rectly from the OPAC menu. The company originally began the Galaxy effort by focusing on the small library market. However, its broad-based functionality has been marketable in the larger system arena as well, as Gaylord installed a 215-terminal network in New York State. Data conversion continues to be a major component of Gaylord's business. The company expanded its CD-ROM-based SuperCat cataloging system to include the entire Audio Visual Access Catalog, the National Library of Medicine's catalog, and the Cassidy Cataloguing Services' Law and Business catalog. The company's modest 1992 goals are having the happiest customers in the industry, the most advanced integrated library system in the industry, and being number one in the U.S. industry.

Geac Computer Corp. Ltd.

Despite repeated attempts to obtain a user list from Geac, it never arrived. Thus for the purposes of this profile, the company's 1991 sales figures remain unverifiable. However, during 1991 Geac claimed 38 new systems of varying sizes. One of Geac's 1991 major accomplishments was its campaign to donate 20 library software systems to libraries that had a special vision of the library and its role in society as an information center. Also, following a rather ubiquitous vendor trend, Geac introduced its graphical user interface for its proprietary GLIS system. Other accomplishments in the software arena include a multilingual user interface (eight languages including Russian) and networked interfaces to databases like ABI/Inform and Business Dateline. According to the company, its financial stability improved and 1991 earnings increased 14% over its prior fiscal year. At the beginning of 1992 the company introduced Release 4.0 for its Advanced product, with new modules for physical inventory, materials bookings, gateways to external databases, and circulation backup. Other 1992 goals include additional journal citation indexes and joint projects to facilitate physically challenged patrons. With the service implications associated with the Americans with Disabilities Act, vendors and clients might consider system enhancements like large-type video displays, special keyboards and other input devices, and audible system output capabilities.

Highland

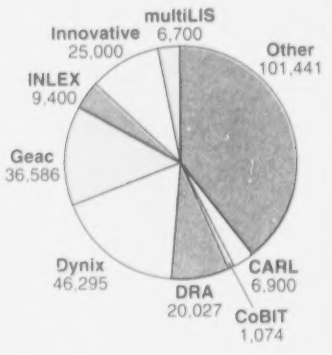
Highland Library Systems, Inc. is another newcomer to this article. With a total user base of 24 libraries, the company claimed nine system sales in 1991. Functioning under the Pick operating system, the software package has the flexibility to run on most PC and PS/2 compatibles, as well as many other Pick and UNIX-capable platforms. The company's primary 1992 goal is to restructure its software to accommodate distributed databases like those that might be found in a regional library system.

IME

Although the London-based company was founded in 1984, Information Management & Engineering Limited (IME) is yet another rookie to the parade of vendor profiles for 1991. Operating in both the UNIX and the MS/DOS environments, the company claims a simple transition path between these two operating systems and the ability to function on all standard LAN and network environments. Both product versions include the same modules—OPAC, circulation, cataloging, acquisitions, serials control, interlibrary loan, and report generation. Running counter to the world market trend where U.S. vendors have spread their wings abroad, this foreign company and its U.S. affiliate have taken advantage of stateside opportunities. The company's 1991 efforts have been significant, with 26 U.S. system sales. However, its major successes have been on the European continent, where it sold 164 systems last year. The company apparently prefers a software-only sales arrangement, with 97 percent (198 of 206) of its 1991 contracts following that pattern. Matching the general system downsizing trend, fully 97 percent of the IME 1991 sales had 32 or fewer terminals, with sales fairly evenly split among the four lowest terminal ranges. The company's 1991 accomplishments include its 14th language interface translation, and the establishment of a Consultancy and Project Management Department. Especially in the smaller library environment, these services are becoming critical to project success and are extremely welcome. IME's 1992 goals include a new software release, which is promised annually as a company policy. With its flexible line of hardware platform choices, IME should be an interesting company to follow during the coming year.

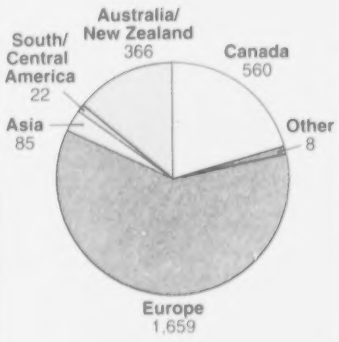
Chart 4: Estimated Library Systems Revenues of Automation Vendors 1991

(In Thousands of Dollars)



Total Revenues: $253,423
Variance: +/- 5.0%

Chart 5: Total Foreign Installations by Geographic Region



Variance: +/- 1%

Information Dimensions

Information Dimensions is another software-only vendor making large gains in the special library segment of the marketplace in 1991. Its installations number 33, with the United States, Canada, and Europe the company's biggest (and only) audiences. Information Dimensions successfully migrated its user base to new Sun, HP, and CDC UNIX–based platforms and introduced two new UNIX versions for the popular DEC ULTRIX and IBM R/6000 lines. Like several other vendors, Information Dimensions signed an agreement with UMI to market ABI/Inform. The coming year will bring continued international efforts in marketing its software and in handling MARC records.

INLEX

INLEX is another vendor that recognized the importance of the growing small-library market. Late in 1991 the company purchased The Assistant, an MS/DOS microcomputer-based system. Therefore, with its dual-product line of durable Hewlett-Pack-ard minicomputer and PC-compatible software packages, the company appears poised to straddle the large and small ends of the marketplace spectrum. In 1991 INLEX sold 53 systems, fairly evenly divided among their two offerings—22 for the INLEX/3000 package and 31 for The Assistant. Again this year, virtually all of these systems were sold in the United States, with just one going to Canada. Although almost all of the companies had difficulty in finding large system customers, INLEX managed to sell two systems in the 126-200 terminal range, which was about 9% of the INLEX/3000 sales effort. Terminal counts for The Assistant are more difficult to ascertain, as the company did not closely track these statistics, a trend that will probably increase as LAN-based systems proliferate. The 1991 accomplishments include acquisitions module enhancements for electronic ordering from Ingram and BNA and a joint project with its users group to establish an electronic bulletin board. Other software efforts include access to periodicals databases like IAC and Wilson. With the general marketplace tendency toward unmodified, off-the-shelf equipment, a major hardware counterdevelopment is the INLEX 200

Series terminal. With its custom chip, the terminal sports its own ALA character set, along with other noteworthy features like adjustable time-outs, a special key-disabling menu, screen saver, pop-up calculator, and INLEX-customized keys. Goals for 1992 include enhancements to the Reserve Book Room Module and additional efforts to integrate a CD-ROM optical jukebox.

Innovative

Innovative Interfaces enjoyed an outstanding year in 1991. The company generally reflected the downsizing market trend by selling ten of its 55 systems in the 1-8 terminal range. However, Innovative performed remarkably well by moving 26 systems in the increasingly rare 33-125 terminal market segment. Revenues were up 25% from 1990, hitting an all-time high of $25 million, a rather difficult accomplishment in a lackluster economy. Other 1991 successes include the OhioLINK project, a contract for 18 systems, and a statewide union catalog. Bucking the general system downsizing trend, this network is slated for 2500 terminals, with statewide online requests for any book in the database. Its two systems in Taiwan fully support the Chinese-Japanese-Korean (CJK) character set throughout, in-

Table 3: System Interfaces

Vendor	OCLC	RLIN	WLN	Super-Cat	Biblio-File	Auto-Graphics	Marcive	Baker & Taylor	Brodart	Laser-Quest	Other Interface
AutoGraphics	√	√	√	√	√	√	√	√	√	√	
CARL	√	√	√	√	√	√	√	√	√	√	
Centel/DataLib	√	√									
CLSI	√	√	√		√	√	√(T)	√(T)	√	√	LSSI; PICA (T); MITINET (PC)
CMDS	√				√						Export from Mandarin
CoBIT	√				√			√	√		
Comstow	√				√		√				Any USMARC will be developed
CTB	√	√	√	√	√	√	√	√	√		
Data Research	√	√	√	√	√	√	√	√	√		DRANET
Data Trek	√	√	√		√		√	√	√	√	MITINET, Bibl Nationale France
Dynix	√	√	√	√	√	√	√	√	√	√	Various French, British, Australian
Dynix Marquis	√	√	√	√	√	√	√	√	√	√	Any w/MARC communications
Gateway	√		√		√	√	√	√	√	√	Any USMARC or MicroLIF
Gaylord	√	√	√	√				√	√	√	
Geac Adv. GLIS	√	√	√	√	√	√	√	√	√	√	
Highland	√			√(Ds)	√(Ds)	√(Ds)	√(Ds)	√(Ds)	√(Ds)	√(Ds)	
IME	√	√			√		√			√	LIBRIS, PICA, BLAISE, SABINET
Info Dimensions	√	√	√	√	√	√	√	√	√	√	
INLEX	√	√	√	√	√	√	√	√	√	√	LaserCat, LC Authorities
Innovative	√	√	√	√	√	√	√	√	√		
Library Corp.	√	√	√		√		√	√	√		
multiLIS	√	√	√	√	√	√	√	√	√	√	
Nichols	√		√		√		√	√	√	√	Mitinet, ASCIS (Australia)
NOTIS	√	√		√	√	√	√	√	√	√	Any CD-ROM MARC database
NSC	√	√	√	√	√		√	√	√		
Ringgold	√	√	√	√	√	√	√	√	√	√	Any MARC record source
Sirsi	√	√	√	√	√	√	√	√	√	√	Books in Print
UNISYS	√	√	√		√	√	√	√	√		Any MARC record source
VTLS	√	√	√	√	√	√	√	√	√	√	Gaylord
Winnebago	√	√	√	√	√	√	√	√	√	√	w/MARC compatibility module

T(ape) = data transfer via magnetic tape load only; not an interactive, online interface. Ds = diskettes.

cluding the patron file. Software efforts include a fully integrated Materials Booking module, E-mail, inventory control, a community information database, journal citations, and gateway access to external systems. Looking ahead for 1992 Innovative claims that its order backlog is strong and the company is in excellent financial shape.

The Library Corporation

Yet another new face in the profile list, Library Corporation is probably best known for its BiblioFile product, a CD-ROM-based cataloging system. But the company has also quietly put a great deal of work into its hybrid system, which connects via LAN its CD-ROM-based Intelligent Catalog to a microcomputer-based circulation control system. One might hastily (and incorrectly) dismiss this system as suitable only for single-library operations, but the company listed two multibranch sites among its 1991 accomplishments. Other efforts over the past year include a dial-up PAC and software-only systems running on a variety of LANs (Ethernet, Token Ring, and ARCNet). Following current marketplace pressures, the company plans in 1992 to upscale its small system design—enhancing its multibranch circulation system and releasing a new serials control module.

multiLIS

Although it also functions in the DEC VMS environment, multiLIS showed that it was able to capitalize on its UNIX-compiled software version by migrating its minicomputer product to 386- and 486-based microcomputers. The vendor claims that its PC software is entirely compatible with its minicomputer-based big brother, offering the complete array of modules. This software redesign is very timely in this era of downsizing pressure, as 90% (35 of 39) of its 1991 system sales were in the 1-16 terminal range. While the company has been considered primarily a Canadian marketeer in the past, over one-half of its 1991 sales were in Europe, another example of expansion away from the North American continent. The vendor's major 1991 accomplishment is its selection by the State University of New York to provide software and services to 42 campuses over the next three years. Goals for 1992 include a U.S. release of the collection exchange module—designed as a response to ever-tightening budget constraints, this resource-sharing software will allow block relocation loans from a central site—a new windowing acquisitions module, and in response to its growth in the European market, a Minitel and Videotex interface.

Nichols Advanced Technology

It is unfortunate that the author could not obtain a client list, as this microcomputer-based Canadian vendor claimed to have a user base exceeding 1000 systems, 260 sold in 1991 alone. Therefore, these numbers remain unverified. Concentrating its efforts in school libraries, during 1991 the company opened an office in Wisconsin to market its Molli circulation and OPAC software. Other products and services include retrospective conversions, barcode readers, and labels. For 1992 Nichols plans to introduce an acquisitions module, and a borrower conversion program to create patron records by importing data from student administration systems.

NOTIS

In terms of system sales, NOTIS put in a performance of uncanny consistency. In 1990 the company sold 15 systems and in 1991 the tabulation was 14 (all but one of these are in the academic sector). Remarkably, the company's KeyNOTIS turnkey product saw three sales, the same as in 1990. The major 1991 news for NOTIS was its acquisition by Ameritech in October. According to Ameritech and NOTIS at the time (and the author has seen little reason to doubt it since), NOTIS will operate exactly as it did before the takeover, with current management remaining in place. Like the Ameritech Dynix purchase, the transaction appears to furnish the benefit of "deep pockets" for capital infusion and R&D as needed. Moreover, because system networking and information transfer are becoming increasingly important, the library automation market is a clear area of interest for a telecommunications company like Ameritech. The primary unresolved issue is the potential conflict between Dynix and NOTIS while vying for the same market. One possible answer is that Dynix has not heavily concentrated on the large academic library market or shown any serious interest in the IBM "heavy iron" environment, both of which are NOTIS mainstays. And NOTIS has generally ignored the public library sector and the international arena, both typical Dynix territories. Among its 1991 accomplishments, NOTIS expanded its software support operations to include the existing Ameritech LS/2000 line of library software and implemented Release 1.1 of its turnkey product KeyNOTIS, thereby expanding it to include all features in Release 5.0 of the NOTIS software-only product. NOTIS enhanced its OPAC with a new Boolean search engine called NOTI-Search, with new positional operators and search qualifiers. System-to-system links will move ahead in 1992, via Z39.50 and TCP/IP to provide a seamless connection for searching and ILL transactions. Other software efforts will include a location-based catalog, where users can specify a subset of an entire NOTIS database, EDI for serials claims, and improvements to MDAS, NOTIS's journal citation software.

NSC

NSC is another software-only vendor whose product runs on the IBM AS/400 series computers. In 1991 NSC installed

Table 4: Size of Installations

Vendor	Smallest Library Installed		Largest Library Installed	
	Terminals	Titles	Terminals	Titles
CARL	96	200,000	1,300	6,000,000
CLSI	2	20,000	396	2,000,000
CMDS	6	30,000	39	110,000
CoBIT	17	72,205	301	454,000
Comstow	2	3,000	32	400,000
CTB	1	1,500	150	200,000
Data Research Assocs.	5	20,000	600+	1,400,000
Data Trek	2	750	40	205,000
Dynix	1	8,000	450+	1,700,000
Gateway	3	10,000	188	400,000
Gaylord	2	26,000	215	1,500,000
GEAC	3	30,000	400	4,200,000
GEAC Advanced	2	10,000	165	1,200,000
Highland	3	6,6000	33	120,000
IME	1	10,000	82	350,000
Information Dimensions	5	10,000	200	600,000
INLEX	7	35,000	200	345,000
Innovative Interfaces	2	5,000	230	1,500,000
Library Corporation	1	5,000	32	21,000
multiLIS	2	5,000	250	2,500,000
NOTIS	15	18,800	1,200+	9,200,000
NSC	4	10,000	64	275,000
Ringgold	1	50,000	32	360,000
Sirsi	2	5,000	150+	927,000
UNISYS	10	7,800	3900+	9,740,000
VTLS	2	3,000	250	3,800,000

five systems and maintained its user base at 20. A full-featured system containing all of the usually encountered subsystems, NSC added MARC-based authority control processing and enhanced its MARC import/export module. Plans for 1992 include continued enhancement of the serials/acquisition module, expansion of windowing capabilities, a new OPAC module, and improved user documentation.

Ringgold Management Systems

A UNIX-based microcomputer system, the Ringgold product has two networkable components: the Nonesuch Acquisitions and the Nonesuch Circulation Control products. The company listed five installations in 1991, three of which are in the 5-8 terminal segment. Other accomplishments include an OCLC Prism interface and the operational status of its acquisitions product in the Milwaukee Public Library. Goals for 1992 include creating the Nonesuch Catalog (a windows-based video graphics array [VGA] color graphics product) and finishing an electronic invoice interface for acquisitions.

Sirsi

Sirsi had a very successful and consistent year. Last year's user base growth was 76%,

Table 5: Hardware Availability

Manufacturer	Model	Vendor
Altos	2000	CLSI
Apple	Macintosh +, SE, Mac II	Data Trek, Winnebago
ARIX	all	Innovative, Sirsi
AT&T	3B2 Series	Centel/DataLib
	Model 850/875	Geac Adv.
BULL	DPX 210, 510	multiLIS
	XPS-100, DPX/2	Geac Adv.
Control Data	EPIX	Info Dimensions
Convergent	all UNIX	Innovative Interfaces
	S640	IME
Data General	AViiON Series	Geac Adv
	MV/ Series	Centel/DataLib, CoBIT
		LS/2000 (Ameritech)
	S/ Series	LS/2000 (Ameritech)
DEC	Vax, MicroVAX,	Centel/DataLib, Comstow,
	under VMS	Data Trek, DRA,
		Dynix Marquis, Gaylord
		Info Dimensions, multiLIS
	VAXstation/VAXsystem,	Comstow, Dynix Marquis,
	under ULTRIX	Geac Adv, IME, Info
		Dimensions, Innovative,
		multiLIS, Sirsi
	PDP 11/XX Series	CLSI
	UltrixRISC System	Dynix, Innovative, multiLIS
Encore	all	Dynix, Geac Adv,
	Series 91, 93	IME
Fujitsu	all	Dynix
Geac	6000, 8000, 9000,	Geac GLIS
	9302, 9500	
Hewlett-Packard	3000 Series	INLEX, VTLS
	9000 (UNIX)	Dynix, Dynix Marquis,
		Info Dimensions, Sirsi
	9000 Series 800	Geac Adv, IME
Honeywell	DPS/6	Dynix
HP/Apollo	9000 Series 800	Geac Adv, IME
	all	Comstow
IBM	30XX	Brodart, Geac Adv,
		Info Dimensions,
		NOTIS, VTLS
	43XX	Info Dimensions, NOTIS
	937X	Info Dimensions, NOTIS,
		VTLS
	9X21	VTLS
	AS/400	CMDS, Gateway, NSC
	ES/9000 Series	Info Dimensions, NOTIS,
		VTLS
	R6000 Series	CLSI, Dynix, Geac Adv,
		Highland, IME, Info
		Dimensions, Sirsi
	RT series	Dynix, Highland
	S/38	NSC
ICL	Power 6 Series	Centel/DataLib
	DRS 40, 50, 60, 300, 500	IME
IN2	Model 4000	Geac Adv
Innovative	INNOVACQ	Innovative Interfaces
Intel	386/486-based systems	Data Trek, Dynix, Highland, IME, INLEX The Asst., Lib. Corp., Sirsi, multiLIS, Nichols, VTLS, Winnebago
McDonnell Douglas	any w/PICK oper. system	Geac Adv
	Sequel, Spirit	Dynix
MIPS		Dynix, Innovative, multiLIS
Motorola	M8000	Geac Adv
	M9000	Highland
NCR	Tower 300, 500, 700	multiLIS, Sirsi
Olivetti	LSX 3020/30/40	Geac Adv
Prime	EXL	Geac Adv
	50 Series, EXL	Dynix
Pyramid	all	Geac Adv, Sirsi
RC	900, 950, 990, 1900	IME
Sanyo ICON	2XXX-4XXX	Geac Adv
Sequent	S40; S2000/250, 450, 750	CLSI
	all	Dynix, Geac Adv, Sirsi
Sequoia	all	Dynix
	Series 200	Geac Adv
	VX9600	IME
Stratus	all	Dynix Marquis
Sun	all	Comstow, Info Dimensions
		Sirsi
	SPARCstation series	Carlyle, Dynix, Dynix Marquis, IME
	3/280, 3/30	IME
Tandem	TXP, TNSII	Alice-B (Ameritech)
	CLX, VLX, Cyclone,	CARL
	TNS, TXP	
	EXT	Utlas
Ultimate	14XX, 3XXX-7XXX	Dynix
UNISYS		Innovative Interfaces
	1100,2200	UNISYS
	5000 Series	Dynix, Geac Adv, IME
	6000 Series	IME, Sirsi
Wang	VS Series	NSC
Wyse	2108,2012,2116i	CLSI

and this year it was 77%, expanding from 81 systems to 144. Sirsi saw continued success in the K-12 market, with 47% of its sales occurring there. The 1991 Sirsi software enhancements, although significant, may now sound familiar—a reflection of general marketplace maturity across vendor lines. Sirsi introduced retrieval interfaces to external databases (Wilson, IAC, UMI, etc.), expanded circulation and acquisitions capabilities, and electronic bulletin boards. Its 1992 plans include a new cataloging release, a new acquisitions release with X.12 transmission capability, additional external databases, and a new security module.

UNISYS

UNISYS PALS system is generally regarded as serving large computer terminal networks, and 1991 was no exception. The PALS product saw five installations in 1991, and four of them have 65 or more terminals. During 1991 the product saw a new software release that includes external database searching (Wilson and UMI). For 1992 the company plans enhancements to its OPAC, reference databases, and acquisitions products, as well a focus on customer satisfaction.

Table 6: Operating Systems

System	Release	Vendor
AIX	2.1,2.2	Geac Adv, Dynix, Sirsi
AOS/VS	7.65+	Centel/DataLib
	7.57+	CoBIT
AOS/VS II	1.21+	CoBIT
Apple Macintosh System	4.2+	Data Trek, Winnebago
Apple Macintosh Finder	6.0+	Data Trek
CDC NOS/VE	1.2.1	Information Dimensions
CICS	1.7	Brodart
CICS/VS	1.6+	NOTIS
CLSI Proprietary	27.45	CLSI
CMS-1100	5R1A	UNISYS
COMLOG (Data General)	1.52	CoBIT
DG/UX	R4.X	Geac Adv
DMS	8R3G	UNISYS
EXEC	41R3	UNISYS
GeOS.8	3.4	Geac GLIS
GeOS.9	2.7.4	Geac GLIS
Guardian	90 XF	CARL
	B40, C20	Alice-B (Ameritech)
Hewlett-Packard MPE V/E		Inlex, VTLS
Hewlett-Packard MPE/XL		Inlex, VTLS
Hewlett-Packard OS		Info Dimensions
IN2	Rel.3.X	Geac Adv
INFOS II	Rev.5.01+	CoBIT
Motorola System V	68/88	Geac Adv
MS/DOS	3.2+	Autographics SLiMS
MS/DOS	3.3+	CTB, Data Trek, INLEX The Asst. Nichols, Winnebago
	5	Library Corporation
MVS-IBM/ESA		Info Dimensions, NOTIS
MVS-IMB/SP		Info Dimensions
MVS-IBM/370		NOTIS
MVS-IBM/TSO		Info Dimensions
MVS-IBM/XA		Info Dimensions, NOTIS
NCR (Unix V)		multiLIS
OS-IBM/VS1		NOTIS
OS/2	1.X	Dynix Marquis
OS/400		NSC, ProData
	3.0	CMDS
	V.2 Rel 1	CMDS, Gateway
OS1100	5R1	UNISYS
PICK		Dynix, Highland
	1.6	Geac Adv.
PI/1 (Data General)	2.52	CoBIT
Primos (oper. PICK)		Dynix
Pyramid OSx	4X	Geac Adv
Sun OS		Info Dimensions, IME
System V RTU		Geac Adv
TOPIX	6.X	Geac Adv
ULTRIX		Info Dimensions, Comstow
	3.X	Geac Adv, Innovative Interfaces
UMIPS RISC OS (UNIX)	4.51	multiLIS
UNISYS System V	2.0, 3.X	Geac Adv
UNIX		UNISYS
	AIX	Comstow, CLSI LIBS 100+, Dynix, Geac Adv, Highland, IME, Info Dimensions, Sirsi
	BSD 4.3, HP-UX	Comstow
	System V.3	Centel/DataLib,Innovative,Ringgold
		Geac Adv, multiLIS, Sirsi
	System V RTU	Geac Adv
	System V.3.2	Carlyle
	System V.4.2	IME
	System V.5.n	Comstow
	System V.5.2	multiLIS
	SCO 3.2	IME, multiLIS
UNIX (oper. Altos)	Sys. V.5.3 DT3	CLSI (Rel. 28)
UNIX (oper. Bull)	V.2.X	Geac Adv, multiLIS
UNIX (oper. Convergent)	CTIX 5.22	IME
UNIX (oper. Encore)	UMAX V.3.0.6	IME
UNIX (oper. ICL)	V 3.2, NX2.22.02	IME
UNIX (oper. PickTel, PickBlue)		Dynix
UNIX (oper. Sequent)	3.017	CLSI (Rel. 28)
UNIX (oper. Sequent)	PTX1.3	CLSI (LIBS 100+)
UNIX (oper. Sequent)	Dynix 3.0.17	IME
UNIX (oper. VMark, UniVerse)		Dynix
VM-IBM/CMS		Info Dimensions
VM-IBM/SQLVS	1.2+	VTLS
VMS		Dynix Marquis, Info Dimensions
	4.4–5.2	Comstow
	4.5+	Centel/DataLib
	5.0+	Data Trek
	5.4	multiLIS
	5.5	Comstow
	latest	DRA, Gaylord
VMS (oper. PICK)		Dynix
VRM (IBM) (oper. PICK)		Highland
VSE/SP	2.1+	NOTIS
Wang VS		NSC
Windows	3.X	Dynix Marquis
Xenix		Ringgold

VTLS

VTLS boosted its revenues by 20%, its staffing by 10%, and its user base by 14% (from 187 to 214 sites). An outspoken proponent of the multimedia library automated system, the company installed its first such system at the National Agricultural Library. With one-half of all VTLS systems going to the European continent—including a multilibrary network in Spain—the company has enjoyed some results from its aggressive marketing there. Bucking the general downsizing trend somewhat, VTLS managed six new sites having an excess of 65 terminals, a worthy performance as this market diminishes domestically. The company plans additional versions of its software for 1992, falling into step with much of the market by offering a UNIX product. Other goals include expansion of its IBM market and enhancements of its multimedia catalog. With its MicroVTLS system for the smaller libraries, Hewlett-Packard-based products for larger ones, its IBM mainframe-based software, and its upcoming UNIX system, VTLS has the flexibility to meet the challenges of the 1990s.

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